

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN WAINRIGHT

Appeal 2009-000138
Application 09/426,143
Technology Center 2600

Decided: September 28, 2009

Before JOHN C. MARTIN, JOHN A. JEFFERY, and
BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 (2002) from the Examiner's final rejection of claims 1-3, 5, 7-14, 16, and 18-22 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Publication 2002/0008703, issued to Merrill on January 24, 2002 (filed Feb. 26, 1998). We have jurisdiction under 35 U.S.C. § 6(b).

We do not reach the merits of the Examiner's rejection. Pursuant to our authority under 37 C.F.R. § 41.50(b), however, we enter new grounds of rejection under 35 U.S.C. § 101.

Appellant's Invention

Appellant's invention relates to computer executable methods and computer readable media that are used for creating computer generated three-dimensional (3-D) animations. Spec. 1; *e.g.*, claims 1, 8, 12 and 18. Computer applications associated with these methods and media execute computer instructions corresponding to user input that may be entered through a graphical user interface (GUI). Spec. 1. More specifically, the claimed embodiments include methods (*e.g.*, independent claims 1 and 8) and computer-readable media storing instructions (*e.g.*, independent claims 12 and 18) for executing an operation on a set of graphical components. App. Br. 7. The graphical components are data sets or procedures that generally represent the shapes and surface that make up a modeled entity. App. Br. 7; Spec. 1.

Independent claims 1 and 12 are illustrative. They read as follows:

1. A method of executing an operation on a set of graphical components, the method comprising the computer-implemented steps of:

detecting that a statement contains

an operation identifier that specifies said operation,

pattern matching criteria, and an attribute identifier that identifies an attribute; and

executing said statement by

identifying said set of graphical components associated with identifiers that satisfy said pattern matching criteria, and

performing said operation on said attribute of each graphical component in said set of graphical components that satisfy said pattern matching criteria, altering state information corresponding to each graphical component in said set of graphical components to generate a frame within an animation.

12. A computer-readable medium carrying one or more sequences of one or more instructions for executing an operation on a set of graphical components, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

detecting that a statement contains

an operation identifier that specifies said operation,

pattern matching criteria, and

an attribute identifier that identifies an attribute; and

executing said statement by

identifying all graphical components associated with identifiers that satisfy said pattern matching criteria, and

performing said operation on said attribute of each of said graphical components that satisfy said pattern matching criteria, altering state information corresponding to each graphical component in said set of graphical components to generate a frame within an animation.

ISSUES

- I. Are method claims 1-3, 5, 7-11, 21, and 22 which recite methods of performing a mathematical algorithm on a computer, directed towards patent-eligible subject matter under 35 U.S.C. § 101?
- II. Are apparatus claims 12-14, 16, and 18-20, which recite computer-readable media carrying instructions for executing a mathematical algorithm on a computer processor, directed towards patent-eligible subject matter under 35 U.S.C. § 101?

FINDINGS OF FACT

The record supports the following Findings of Fact (FF) by a preponderance of the evidence:

Appellant's Specification:

1. "A graphical component is a set of data, procedures, or a combination thereof, used to represent a geometry, such as a curve or the surface of a car." Spec. 1.
2. The term "object", as used herein, refers to any data structure with one or more fields, which are referred to herein as attributes. The attribute of an object may be an object. The term object encompasses, but is not limited to, the kinds of objects developed according to object-oriented design

techniques. In object-oriented design techniques, an object is not only associated with attributes, but with methods or routines. Objects also belong to a class. A class definition defines the attributes and the methods associated with objects that belong to the class.

An “object identifier” is data, such as a string of characters, that identifies one or more objects. An “attribute identifier” is data, such as a string of characters, that identifies an attribute. An object-attribute-identifier identifies a particular attribute of a particular object

A statement is a unit of code that specifies one or more operations to perform with respect to one or more objects. A statement includes an ‘operation identifier’, which is data, such as a string of characters, that identifies an operation to perform. A statement may also include an object-attribute identifier, and other data that, for example, specifies parameter values for the operation.

Spec. 8-9.

3. “To generate 3-D animations, a 3-D designer creates 3-D computer models of the entities using computer aided design systems (CAD) 3-D models are built by users using a Computer Aid Design (“CAD”) system.”

Spec. 1.

4. [T]o generate a sequence of frames, a user may repetitively perform the same GUI manipulations. Often, user input that is created by repetitively performing the same kinds of manipulations may be entered more efficiently through the use of a scripting language. A scripting language is a computer language that contains instructions that correspond to user input that may be entered through a GUI. This allows users of CAD systems, with little or no training in programming, to develop scripts because the scripts contain instructions that correspond to familiar ways of entering input through a GUI. In addition, the scripting language, like computer languages in general, define control constructs that may be used to control the

execution of programs written in a scripting language execution of a set of instructions.

Spec. 3.

5. The term “computer-readable medium” as used herein refers to any medium that participates in providing instructions to processor 304 for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. Non-volatile media includes, for example, optical or magnetic disks, such as storage device 310. Volatile media includes dynamic memory, such as main memory 306

Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, a CD-ROM, any other optical medium, punchcards, papertape, any other physical medium with patterns of holes, a RAM, a PROM, and EPROM, a FLASH-EPROM, any other memory chip or cartridge, *a carrier wave* as described hereinafter, or any other medium from which a computer can read.

Spec. 19 (amended Oct. 15, 2002, at 4-5) (emphasis added).

PRINCIPLES OF LAW

“Before considering the rejections . . . , we must first [determine the scope of] the claims” *In re Geerdes*, 491 F.2d 1260, 1262 (CCPA 1974).

Section 101 of Title 35 of the United States Code states:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101.

The Supreme Court . . . has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under [35 U.S.C.] § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. . . . A claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed. And a claimed process that transforms a particular article to a specified different state or thing by applying a fundamental principle would not pre-empt the use of the principle to transform any other article, to transform the same article but in a manner not covered by the claim, or to do anything other than transform the specified article.

In re Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc), *cert. granted*, 77 U.S.L.W. 3442, 3653, 3656 (U.S. June 1, 2009) (No. 08-964).

“A transitory, propagating signal . . . is not a ‘process, machine, manufacture, or composition of matter.’ Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007), *reh’g denied en banc*, 515 F.3d 1361 (Fed. Cir. 2008), and *cert. denied*, 129 S. Ct. 70 (2008)).

ANALYSIS

I. METHOD CLAIMS 1-3, 5, 7-11, 21, AND 22

Claim 1 recites a method of executing an operation on a set of graphical components comprising the two computer-implemented steps of

(1) detecting that a statement contains specified characteristics; and (2) executing the statement in a specified manner *to* generate a frame within an animation. Our analysis will therefore focus on whether claim 1 recites a patent-eligible process under § 101. A process claim satisfies § 101 if it: (1) is tied to a particular machine, or (2) transforms an article into a different state or thing. *Bilski*, 545 F.3d at 961. Accordingly, we apply each prong of this machine-or-transformation test to claim 1.

Bilski – Transformation Prong

The following terms used in claim 1, “graphical component,” “statement,” “operation identifier,” “attribute,” and “attribute identifier,” all relate to various types of data, such as data strings and data fields. FF 1-2. As such, the method of claim 1 is, in fact, directed towards the computer-implemented steps of: (1) detecting that computer code contains specified data; and (2) executing the computer code in a specified manner so as to alter state information.

Appellant’s Specification further states:

A frame is the state of a set of graphical components at a particular point in time To generate a sequence of frames, a user through the [graphical user interface] GUI interface on a CAD system may generate data specifying the state of the frames. For example, a user is creating data that specifies the state for each frame in a sequence of frames.

Spec. 2. We therefore understand the second step of claim 1 to more specifically be a step of executing computer code in a specified manner so as to convert one data set into a second data set.

Furthermore, the last limitation of claim 1 also recites the purpose for converting this first data set to the second data set: “*to* generate a frame

within an animation.” Claim 1 (emphasis added). This limitation’s term “to” indicates that claim 1 does not necessarily encompass the final act of generating a physical animation frame. Rather, claim 1 only encompasses the acts of gathering data and executing computer code in a manner such that an unclaimed animation frame may be subsequently generated. In summary, then, method claim 1 is directed towards a data-gathering step followed by a mathematical algorithm, both steps being carried out by a computer.

The *Bilski* court noted that “the transformation of [raw data representing physical and tangible objects] into a particular visual depiction of a physical object on a display was sufficient to render [a] process patent-eligible.” *Bilski*, 545 F.3d at 963 (citing *In re Abele*, 684 F.2d 902 (CCPA 1982)). The patent-eligible process discussed in *Bilski* is distinguishable from the present process of claim 1 though. As noted above, claim 1 does not recite an additional step of transforming the generated data set into a visual depiction or graphical display. Rather, the method of claim 1 merely converts one data set into a second data set. We do not find such a data conversion to constitute a “transformation” within the meaning of *Bilski*’s machine-or-transformation test. See *Bilski*, 545 F.3d at 952-53 (internal citations omitted).

Moreover, the fact that claim 1 further includes a data-gathering step is not sufficient to make the claim patentable. The *Bilski* court reaffirmed the further principle that “adding a data-gathering step to an algorithm is insufficient to convert that algorithm into a patent eligible process.” *Bilski*, 545 F.3d at 963 (internal citations omitted).

[A]t least in most cases, gathering data would not constitute a transformation of any article. A requirement simply that data

inputs be gathered—without specifying how—is a meaningless limit on a claim to an algorithm because every algorithm inherently requires the gathering of data inputs. Further, the inherent step of gathering data can also fairly be characterized as insignificant extra-solution activity.

Id. (internal citations omitted).

Because the process of claim 1 does not transform any article, we therefore find that claim 1 fails *Bilski*'s transformation prong. Accordingly, we next inquire whether the process of claim 1 is tied to a particular machine or apparatus under *Bilski*.

Bilski – Particular Machine Prong

As noted above, claim 1 recites the computer-implemented steps of (1) detecting that a statement (computer code) contains specified data fields and data; and (2) executing the statement (perform a mathematical algorithm) by identifying a set of graphical components (a data set) associated with the statement, and performing a specified operation (algorithm) on each graphical component (on each data set), for the purpose of subsequently generating a frame of computer animation. Presumably, the computer would have to be programmed with appropriate scripting language software to perform the claimed computer algorithm. See FF 4. The question, then, is: Does a computer that is inherently capable of performing the method of claim 1—that is, does a general computer programmed with scripting language—constitute a special-purpose or particular machine so as to tie the recited method to a particular machine?

Arguably, such a computer could be deemed to be a particular machine. See *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc)

(noting that a general purpose computer programmed to carry out a claimed invention “creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software”) (internal citations omitted). One could conversely argue, though, that every general computer must necessarily be programmed in some manner to perform each and every one of its functions. Under such an interpretation, though, every general-purpose computer must inherently constitute a special-purpose machine.

As this latter position is not the law, the question remains: When is a general purpose computer transformed into a special-purpose machine? The *Bilski* court chose to “leave to future cases the elaboration . . . whether or when recitation of a computer suffices to tie a process claim to a particular machine.” *Bilski*, 545 F.3d at 962. Furthermore, this issue has not been argued in relation to the present facts by either the Examiner or Appellant. We too, then, shall also refrain from answering this question. We instead resolve the issue based upon the pre-emption doctrine.

The claimed mathematical algorithm relates to computer-generated 3-D animation. Spec. 1. Appellant explains that “[t]o generate 3-D animations, a 3-D designer creates 3-D computer models of the entities using computer aided design systems (CAD) . . . 3-D models are built by users using a Computer Aid Design (“CAD”) system.” FF 3.

[T]o generate a sequence of frames, a user may repetitively perform the same GUI manipulations. Often, user input that is created by repetitively performing the same kinds of manipulations may be entered more efficiently through the use of a scripting language. A scripting language is a

computer language that contains instructions that correspond to user input that may be entered through a GUI. This allows users of CAD systems, with little or no training in programming, to develop scripts because the scripts contain instructions that correspond to familiar ways of entering input through a GUI. In addition, the scripting language, like computer languages in general, define control constructs that may be used to control the execution of programs written in a scripting language execution of a set of instructions.

FF 4.

As such, the record indicates that the mathematical algorithm of claim 1 has no substantial practical application, except in connection with a digital computer. More to the point, the mathematical algorithm further has no substantial practical application, except in connection with use by a computer that has been programmed with scripting language software for generating computer animation frames. As such, if claim 1 were allowed, the ensuing patent would wholly pre-empt all practical uses of the algorithm. That is, claim 1 would be a patent on the mathematical algorithm itself. Claims to such algorithms have been held to be drawn to unpatentable subject matter. *See Bilski*, 545 F.3d at 953-54. We therefore find that the method of claim 1 is not tied to a particular machine or apparatus either.

To summarize, the method of claim 1 fails both prongs of *Bilski*'s machine-or-transformation test. For these reasons then, we enter a new ground of rejection for method claim 1 under 35 U.S.C. § 101 because claim 1 is not directed towards patent-eligible subject matter. *See Bilski*, 545 F.3d at 943.

Claim 2 depends from claim 1 and further requires that “said statement includes a first string of characters that contains at least one wild card character and that specifies said pattern matching criteria.” Claim 3 depends, in turn, from claim 2 and further specifies that “said first string is part of a second string of characters, wherein said second string of characters includes said attribute identifier and is in a format that conforms to object-dot notation.” Dependent claim 7 further specifies that the claim 1 “step of detecting that a statement contains pattern matching criteria includes detecting that the statement contains pattern matching criteria for a hierarchical identifier.” Restated, claims 2, 3, and 7 only narrow claim 1 in further specifying the details of the statement computer code. We see no reason, then, why any of these claims overcomes the failure of claim 1 to set forth patentable subject matter.

Dependent claim 5 further specifies that the statement of claim 1 is “written in a scripting language and the step of detecting is performed by a script processor.” As such, claim 5 expressly states a more specific type of computer. Just as explained in relation to claim 1 though, we see no substantial use of the claim 5 algorithm other than for the purpose of computer animation that is carried out by the processor of a computer that has been programmed with a scripting language. As such, the further language of claim 5 does not overcome the pre-emption bar noted above in relation to claim 1.

Claim 21 depends from claim 1 and further comprises “the step of changing the value of another attribute, the other attributes [sic: attribute?] not associated with the identifiers that satisfy said pattern matching criteria.”

Restated, claim 21 merely adds another algorithmic step to the mathematical algorithm of claim 1. Just like claim 1, claim 21 does not transform an article into a different state or thing, and it is not tied to a particular machine or apparatus.

Independent method claim 8 is similar to method claim 1. The primary differences being that independent claim 8 alternatively recites “collections of graphical components”¹ and sets forth that the statement contains “an attribute identifier that identifies an attribute of a member graphical component of said collection of graphical components.” That is, claim 8 performs the mathematical algorithm on a subset of graphical components that are all associated with a common identifier. These differences do not overcome the failure of claim 1 to set forth patentable subject matter.

Claim 9 depends from claim 8 and further requires that “said collection of graphical components is an array.” Claim 10 depends from claim 8 and further requires that “said collection of graphical components includes all instances of a native type of graphical components managed by a CAD system.” Claim 11 depends, in turn, from claim 10 and further specifies, “wherein said native type is a map type of graphical components, wherein a map type defines a surface.” Restated, claims 9-11 only narrow claim 8 in further specifying the types of data sets on which the claimed mathematical algorithm is performed. We see no reason, then, why any of these claims overcomes the failure of claim 8 to set forth patentable subject matter.

¹ Cf. the preamble of claim 1 reciting, “a set of graphical components.”

Claim 22 depends from claim 8 and further comprises “the step of changing the value of another attribute, the other attribute not associated with the attribute identifier.” Restated, claim 22 merely adds another algorithmic step to the mathematical algorithm of claim 8. Just like claims 1, 8, and 21, then, the method of claim 22 does not transform an article into a different state or thing, nor is it tied to a particular machine or apparatus.

For these reasons then, we also reject dependent claims 2, 3, 5-7, and 21 which ultimately depend from claim 1; independent method claim 8; and dependent claims 9-11 and 22, which ultimately depend from claim 8, under 35 U.S.C. § 101 upon the same grounds.

II. COMPUTER-READABLE MEDIUM CLAIMS 12-14, 16, AND 18-20

Independent claim 12 recites:

A computer-readable medium carrying one or more sequences of one or more instructions for executing an operation on a set of graphical components, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of [the mathematical algorithm recited in claim 1].

Claim 12. Appellant’s Specification, in turn, defines the term “computer readable medium” broadly to expressly include carrier waves. FF 5. However, a carrier wave has been held to be unpatentable subject matter. *See Nuijten*, 500 F.3d at 1357 (holding “[a] transitory, propagating signal . . . is not a ‘process, machine, manufacture, or composition of matter.’ Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable

subject matter”). *See also* U.S. Patent & Trademark Office, *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101*, Aug. 2009, at 2, *available at* http://www.uspto.gov/web/offices/pac/dapp/opla/2009-08-25_interim_101_instructions.pdf:

A claim that covers both statutory and non-statutory embodiments . . . embraces subject matter that is not eligible for patent protection and therefore is directed to non-statutory subject matter. . . . For example, a claim to a computer readable medium that can be a compact disc or *a carrier wave* covers a non-statutory embodiment and therefore should be rejected under § 101 as being directed to non-statutory subject matter.

(emphasis in original).

For these reasons then, we enter a new ground of rejection for independent claim 12 under 35 U.S.C. § 101 because claim 12 is not directed towards patent-eligible subject matter. For similar reasons, we also reject (1) dependent claims 13, 14, and 16, which depend from claim 12; (2) independent medium claim 18; and (3) dependent claims 19 and 20, which depend from claim 18.

Moreover, even if computer-readable medium claims 12-14, 16, and 18-20 were alternatively limited so as to exclude reading on carrier waves, it would not change our conclusion that these claims are directed towards patent-ineligible subject matter. That is, even though the Specification recites that the computer-readable medium may be in alternative forms such as “a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, a CD-ROM, any other optical medium, punchcards, papertape, any other physical medium with patterns of holes, a RAM, a PROM, and EPROM, a FLASH-EPROM, any other memory chip or

cartridge” (FF 5), and even if claims 12-14, 16, and 18-20 were limited to such computer hardware or physical things, the fact such computer hardware and physical things constitute machines or articles of manufacture does not alter our conclusion that claims 12-14, 16, and 18-20 are directed towards patent-ineligible subject matter.

Computer-readable medium claims 12-14, 16, and 18-20 recite verbatim the computer algorithms that were respectively recited in method claims 1-3, 5, and 8-10. In *Ex parte Gutta*, No. 2008-4366, 2009 WL 2563524, at *11 (BPAI 2009) (per curiam), an expanded panel of this Board held that when computer-readable medium claims recite a mathematical algorithm, they must be reviewed to determine whether they are either (1) limited to a tangible practical application, in which the mathematical algorithm is applied, that results in a real-world end use (i.e., not a mere field-of-use label having no significance); or (2) limited so as to not encompass substantially all practical applications of the mathematical algorithm either in all fields of use of the algorithm or only one field. *Id.* But since we find that the claims meet neither of these criteria as we indicated in the discussion pertaining to claims 1-3, 5, and 8-10, we find that claims 12-14, 16, and 18-20 also fail to recite statutory subject matter under § 101.

PRIOR ART REJECTION

As to the prior art rejection, our decision is dispositive with respect to patentability since claims 1-3, 5, 7-14, 16, and 18-22 on appeal do not recite patent-eligible subject matter under § 101. We therefore need not reach the

question of whether claims 1-3, 5, 7-14, 16, and 18-22 would have been obvious under § 103. *See Diamond v. Diehr*, 450 U.S. 175, 188 (1981); *In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2009) (declining to reach obviousness rejection on appeal after concluding many claims were nonstatutory under § 101); *Bilski*, 545 F.3d at 951 n.1 (noting that § 101 is a threshold requirement and that Examiner may reject claims solely on that basis); *In re Rice*, 132 F.2d 140, 141 (CCPA 1942) (finding it unnecessary to reach rejection based on prior art after concluding claims were directed to nonstatutory subject matter).

CONCLUSIONS OF LAW

- I. Claims 1-3, 5, 7-11, 21, and 22, which recite methods of performing a mathematical algorithm on a computer, are not directed towards patent-eligible subject matter under 35 U.S.C. § 101.
- II. Claims 12-14, 16, and 18-20, which recite computer readable media carrying instructions for executing a mathematical algorithm on a computer processor, are not directed towards patent-eligible subject matter under 35 U.S.C. § 101.

DECISION

We do not reach the merits of the Examiner's rejection with respect to all pending claims on appeal. Pursuant to our authority under 37 C.F.R. § 41.50(b), however, we enter new grounds of rejection for claims 1-3, 5, 7-14, 16, and 18-22 under 35 U.S.C. § 101.

FINALITY OF DECISION

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). This regulation states “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

Furthermore, 37 C.F.R. § 41.50(b) also provides that Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

37 C.F.R. § 41.50(b)

gvw

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